REMARKS

Claims 1, 3, 10, 11, 14, 17, 21, and 25-36 are pending in the application.

Claims 1, 3, 10, 11, 14, 17, 21, and 25-36 stand rejected.

Claims 1, 14, 17, 21 and 25-36 have been amended. No new matter has been added. Support for these claim amendments can be found, at least, in ¶¶ [0045]-[0048], [0050], [0055], [0074]-[0079] and Figures 2D-2F, 3 and 5 of the originally-filed Application.

Objection to Drawings

The drawings are objected to under 37 CFR 1.83(a). Applicants respectfully traverse this objection. In particular, Applicants respectfully submit that support for Claims 28, 32, and 36, along with accompanying amendments, can be found, at least in part, in ¶¶ [0074]-[0079] and Figure 5 of the originally-filed Application.

Rejection of Claims under 35 U.S.C. §112

Claims 28, 32 and 36 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully traverse this rejection.

The elements of Claims 28, 32 and 36 are supported by the originally-filed Application. For example, the Application, at ¶ [0079], provides that a restoration operation may fail in the event that changes not being replicated are not being tracked. The Application further provides that a change in a region of a volume caused by a restore operation is an example of a change to a region of a volume that is not replicated

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during normal replication. *See* Application, ¶ [0041]. Thus, when a change due to a restore operation is detected and not being tracked, a restoration operation may fail.

<u>Rejection of Claims under 35 U.S.C. § 102 (e)</u>

Claims 1, 3, 10-11, 14, 17, 21, 25, 29 and 33 stand rejected under 35 U.S.C. § 102(e) being as being taught by Earl et al., U.S. Patent Publication No. 2003/0208111 (Earl). Applicants respectfully traverse this rejection.

Claim 1 as amended is representative of amended independent Claims 11 and 17 and recites the following elements:

1. A method comprising:
replicating data from a first volume to a second volume, wherein
    the replicating comprises copying to the second volume only data from
        regions of the first volume that are modified by application-driven
        update operations, and
    the application-driven update operations are initiated by an application
        managing data in the first volume;
while the replicating the data from the first volume is being performed, detecting
    a change to a first region of the first volume, wherein
    the change is caused by a restore operation to restore the first volume from
        a third volume,
    the restore operation is not an application-driven update operation initiated
        by the application,
    the change is detected by detecting the restore operation and accessing a
        restoration data structure,
    the restoration data structure identifies regions of the first volume that are
        not synchronized with the third volume, and
    the change to the first region caused by the restore operation is not
        designated for replication from the first volume to the second
        volume at the time of the detecting;
in response to the detecting, adding information identifying the first region to a
    replication data structure, wherein
    the replication data structure identifies regions of the first volume that are
        designated for replication to the second volume,
    the regions of the first volume designated for replication to the second
        volume are regions of the first volume that are modified by

application-driven update operations and the first region of the first
volume changed by the restore operation, and

the adding is performed while the replicating is being performed; and

in response to the adding the information to the replication data structure,
replicating data modified by the restore operation from the first region of
the first volume to the second volume, wherein

the replicating the data from the first region is performed while the
replication of the data modified by the application-driven update
operations from the first volume is ongoing, and

the replicating the data from the first volume, the detecting, the adding,
and the replicating the data from the first region are performed by a
computing device implementing a replication facility.

The Office Action relies on Earl to disclose the elements of Claim 1. *See* Office Action,

p. 6. However, the cited sections of Earl fail to show, teach, or even suggest all the

elements of Claim 1, as amended.

First, the cited sections of Earl fail to show, teach, or even suggest the claimed act

of detecting a change to a first region of a first volume, where such a change is detected

by detecting a restore operation and accessing a restoration data structure, which

identifies regions of a first volume that are not synchronized with a third volume. The

cited sections of Earl relied upon by the Office Action to teach the claimed detecting

operation merely provide a method for continuously scanning database data files for

updates. *See* Earl, ¶ [0048]. Further cited sections of Earl purportedly provide that a

customer may capture a snapshot of a database and may perform a restore operation on

the database. *See* Earl, ¶ [0032]. However, the cited sections of Earl fail to teach or

suggest an act of detecting a change to a region of a volume by detecting a restore

operation and accessing a restoration data structure. In fact, the cited sections of Earl fail

to teach or suggest a restoration data structure and thus cannot be said to teach or suggest

that such a restoration data structure is accessed as part of detecting a change to a region

of a volume. Therefore, the cited sections of Earl fail to show, teach, or even suggest the claimed act of detecting a change to a first region of the first volume, where such a change is detected by detecting a restore operation and accessing a restoration data structure that identifies regions of a first volume that are not synchronized with a third volume.

Furthermore, the cited sections of Earl also fail to show, teach, or even suggest that a change to a first region caused by a restore operation is not designated for replication from a first volume to a second volume at the time that the change to the first region is detected. As described above, the cited sections of Earl provide that a database data file is continuously scanned for updates and further provide that a restoration operation is allowable. *See* Earl, ¶¶ [0032], [0048]. However, the cited sections of Earl fail to teach or suggest that a change to a first region of a first volume caused by a restore operation <u>is not designated for replication</u> from a first volume to a second volume <u>at the time the change to the first region is detected</u>. On the contrary, the cited sections of Earl simply provide that a database data file is scanned for updates and those updates are replicated accordingly. Thus, there is no teaching or suggestion in Earl that a change to a first region of a volume, particularly a change caused by a restore operation, is not designated for replication at the time the change to the region is detected. Therefore, the cited sections of Earl fail to show, teach, or even suggest that a change to a first region caused by a restore operation is not designated for replication from a first volume to a second volume at the time that the change to the first region is detected.

Moreover, the cited sections of Earl fail to show, teach, or even suggest that regions of a first volume that are designated for replication to a second volume in a

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replication data structure are regions of the first volume that are modified by application-driven update operations and a first region of the first volume changed by a restore operation. The cited sections of Earl purportedly provide a process for continuously scanning and replicating database log files, and purportedly provide that such a process is used to determine, search for, and replicate database changes made to those database data files. *See* Earl, ¶ [0052]. The Office Action asserts that Earl's process by which database changes are determined, searched for, and replicated discloses the claimed data structure which identifies regions of a first volume that are designated for replication. *See* Office Action, p. 7. However, the cited sections of Earl fail to show or suggest that regions of a first volume that are designated for replication to a second volume in a replication data structure are the regions of the first volume that are modified by application-driven update operations <u>and</u> a first region of the first volume changed by a restore operation. Instead, the cited sections of Earl provide for replicating database changes made to database data files, but fail to make a distinction between regions of a first volume that are designated for replication to a second volume in a replication data structure. In particular, the cited sections of Earl fail to teach or suggest that regions of a first volume designated for replication to a second volume within a replication data structure include both regions of the first volume modified by application-driven update operations and a first region of the first volume changed by a restore operation. Hence, the cited sections of Earl fail to show, teach, or even suggest that regions of the first volume that are designated for replication to a second volume in a replication data structure are the regions of the first volume that are modified by application-driven update operations and a first region of the first volume changed by the restore operation.

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For all these reasons, the cited sections of Earl fail to show, teach, or even suggest all the elements of Claim 1. Hence, Applicants respectfully request the reconsideration and withdrawal of the rejections to Claims 1, 14, 17 and 21, and all claims depending therefrom.

Rejection of Claims under 35 U.S.C. § 103

Claims 26-27, 30-31, and 34-35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Earl as applied to Claims 1, 17, and 21 above in view of Tanner et al., U.S. Patent No. 6,035,412 (Tanner). Applicants respectfully traverse this rejection.

Claims 28, 32, and 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Earl as applied to Claims 1, 17, and 21 above in view of Tal et al., U.S. Patent No. 7,107,589 (Tal). Applicants respectfully traverse this rejection.
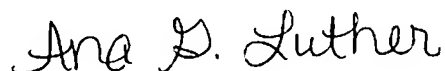
For at least the reason that Claims 26-28, 30-32 and 34-36 are dependent upon allowable base Claims 1, 17 and 21, Applicants respectfully request the reconsideration and withdrawal of the rejection to these claims.

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CONCLUSION

In view of the amendments and remarks set forth herein, the application and the claims therein are believed to be in condition for allowance without any further examination and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephone interview, the Examiner is invited to telephone the undersigned at 512-439-5094.

If any extensions of time under 37 C.F.R. § 1.136(a) are required in order for this submission to be considered timely, the Applicants hereby petition for such extensions. The Applicants also hereby authorize that any fees due for such extensions or any other fee associated with this submission, as specified in 37 C.F.R. § 1.16 or § 1.17, be charged to Deposit Account 502306.

Respectfully submitted,

Ana G. Luther

Ana G. Luther
Attorney for Applicants
Reg. No. 61,704
Telephone: (512) 439-5094
Facsimile: (512) 439-5099

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